

A Non-Motorised User's Perspective on Safety Issues and World Best Non-Motorised Safety Practice in the Netherlands

Alan Parker

Abstract

An outline is provided of the key safety issues of common concern to the Pedestrian Association of Australia and the Bicycle Federation of Australia and how world best planning non-motorised planning practice in the Netherlands is relevant to Australia. In 1995 46% of all trips in the Netherlands were made by either walking or riding bicycles, the highest level of non-motorised travel in the entire OECD. In particular Dutch cities are famous for being bicycle friendly, however the transport data confirm that they are pedestrian friendly as well, which is why the Dutch walk almost as much as they did 20 years ago. Most children, females, the elderly and disabled wheel chair users find it easier and less hazardous to get around than in Australia.

The high quality of the data the Dutch routinely collect for walking and cycling makes it very easy to explain why that is so. From the limited Australian data available the pedestrian road death rate per 100,000 km walked is five times higher than the death rate in the Netherlands. It is concluded that Australian non-motorised user exposure data need to be collected, to monitor non-motorised user death and injury rates. The health benefit of non-motorised travel is recognised by public health authorities but not acted upon by most transport and funding agencies.

It is argued that there is a need to create a non-violent transport system by constraining the increase in motorisation with traffic demand management measures and creating car free city centres; that a low speed culture be promoted. A 50-kph default limit on urban main roads and a 40 kph residential precinct limit must be introduced. There is a need for new innovations in road-user education and traffic law enforcement to improve the safety and convenience of non-motorised travellers. There is an urgent need for more safe road crossings, refuges and bicycle paths and to stop building multi-lane roundabouts in urban areas. New Australian Design Rules are needed for motor vehicles to reduce crash impact trauma and there is an urgent need to ban bullbars in urban areas.

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Introduction

The Pedestrian Council of Australia (PCA) was formed by a group of citizens and organisations concerned at the lack of priority given to the safety amenity and access of pedestrians by government agencies in Australia. The PCA was incorporated on the 1st August 1996 and has a small but growing membership and a wide range of affiliated groups. It is based in NSW and has its greatest influence there. PCA Affiliates ACROD and Paraquat represent the disabled and have members on the PCA board. In Victoria the Town and Country Planning Association (TCPA) is now focussing on the needs of pedestrians.

The Bicycle Federation of Australia (BFA) founded in 1974 represents the peak cycling groups in each state and through them has 30,000 affiliated members mostly in Victoria and NSW but with significant numbers in other states. Together with the BFA the PCA represents the interests of all ordinary non-motorised users but not specialised sporting groups who have their own associations. While the PCA is not incorporated to protect cyclists' safety, amenity and access, some PCA policies are of particular benefit to child cyclists. Likewise many of the shared footways that BFA groups have lobbied for have opened up many recreational areas to pedestrians and the disabled. Since their inception the PCA and BFA have made numerous submissions to government about specific safety issues and this paper focuses on the key issues of common concern.

The European Charter of Pedestrians' Rights adopted by the European Parliament of 1988 (Tolley 1990) was seen by the PCA as a sound and reliable guide to what should be done for pedestrians (Parker 1988 B). The PCA in 1999 convened a conference in Sydney that developed an Australian Pedestrian Charter. This Charter is not an engineering cook book of solutions but is a vision plan; the objectives of which are as follows:-

1. Re-assert the rights and freedoms which pedestrians once enjoyed but which are now being usurped and threatened by other transport modes.
2. Promote the personal, social and environmental benefits of walking as a safe healthy, enjoyable and accessible form of transport, exercise and recreation.
3. Encourage the planning, development and re configuration of neighbourhoods in which safe, attractive and convenient walking conditions are provided as of right.
4. Ensure that in the planning of our communities, access to those basic amenities and services that support daily life is always available to those on foot, bicycle, wheelchair and public transport.

This paper argues that these PCA objectives are achievable by means that will also encourage safe bicycle use because they have already been achieved in the Netherlands today.

Non-motorised travel: Measuring world best practice

For 25 years pedestrian and bicyclist safety have had a much higher priority in the Netherlands than Australia. Which is why the Dutch walk almost as much as they did 20 years ago and Australians walk far less. Figure 1 shows that 46% of 'all trips' in the Netherlands were made by either walking or riding bicycles in 1995, the highest level of non-motorised travel in the entire OECD.

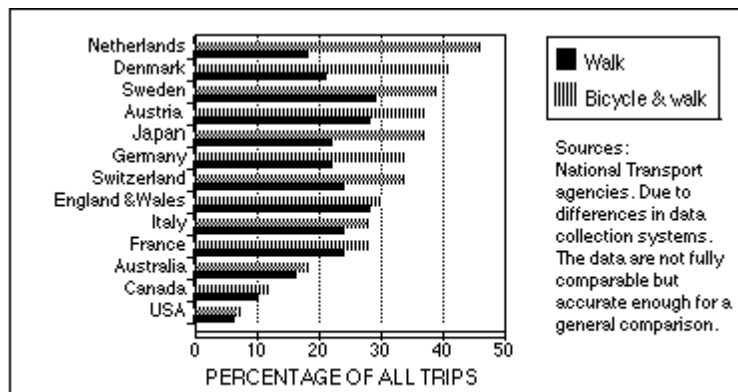


Figure 1, Selected OECD Countries modal shares of walking & bicycling 1995

According to the data in a World Bank Report (Kenworthy et al 1997), six European cities that have only 30% to 45% of private trips to work by car or motor cycle are the wealthiest, have higher levels of non-motorised travel and have lower road death rates than Australian cities. Amsterdam in particular had a road death rate of 5.7 per 100,000 population in 1990 compared to 12 per 100,000 average for all the Australian capital cities. Non-motorised 'trips to work' for these six wealthy and pedestrian friendly cities in 1990 was much higher than the average of 5% for Australian cities. There was a huge difference in Amsterdam (35%), Copenhagen (32%), and Zurich (24%), and less of a difference in Munich (16%), Stockholm (14%), and Vienna (12%).

In five out of these six cities a significant proportion of 'all trips' were bicycle trips: Amsterdam 21%, Copenhagen 16%, Munich 10%, Zurich 7%, Stockholm 7%. Ten years on all these cities all have high levels of bicycle use and in Vienna 6% of all trips are now made by bicycle (Parker 1997)

What is suggested by the Netherlands data for 'all trips' and the 'trip to work' data for Amsterdam, is that the best way to encourage non-motorised travel is to use the Netherlands as a model of world best practice and to learn from their practical experience. Furthermore the pedestrian road death rates per 100,000 km walked are one fifth of the Australian death rate. The Dutch have succeeded in building extensive non-motorised travel networks that are safe while constraining car use and limiting car parking (CROW 1994).

The complementary roles of Walking and Cycling in the Netherlands

Dutch cities are famous for being bicycle friendly and the transport data confirm that popular perception. In 1996 28% of all trips were made by bicycle, more bicycle trips were made by women than men and the elderly made 20% of all their trips by bicycle. (Pucher and Dijkstra 2000). The data also reveal that, compared to Australian cities, Dutch cities are also pedestrian friendly, safer and more secure for all road users and

provide more transport choices for children, female and elderly travellers. Most disabled people, especially wheel chair users, find it a lot easier and less hazardous to get around (Parker 2000 B).

As a result of the huge demand for bicycle facilities pedestrians have benefited greatly from the upgrading of most road intersections in a way that has reduced vehicle speeds and made them safer for all non-motorised users. There are side by side traffic lighted crossings for cyclists and pedestrians on main roads with conveniently situated button actuators and mini signal lights between the footpath and bike path. There are central refuges at most non-signalised crossings with pedestrian routes, or access points to residential precincts. (CROW 1993 A).

There are very few multi-lane roundabouts in built up areas as they are recognised as being dangerous for cyclists and pedestrians. (CROW 1993 B) However there are many low speed single lane roundabouts on urban main roads that are now safer for pedestrians and the disabled. Some have separate paths or bikelanes that are of different colour and are sometimes protected by high concrete kerbs called "hedgehogs (Parker 1998 C). There are also service roads designated as bikeways with intersection crossings that clearly show areas where cyclists and pedestrians have the right of way.

The Dutch clearly understand that in an age of increasing mobility and time scarcity pedestrians will take to cars unless they are given the option of safe cycling trips for short distances or a bike/rail trips for long journeys. (Wellemen 1999) It would sensible to regard the 'real cyclist' for planning purposes as the everyday cyclist. Like the typical European office worker in his work clothes and often riding a wreck of bike with a lady frame and upright handlebars; or a woman cycling home from the shops with bike carrier full of food, or maybe a child on a carrier. The reality is that the safe bikeways that men and women choose to use every day in the Netherlands are also well used by racing and touring cyclists. The Dutch view that the 'real cyclist' is actually an ordinary pedestrian on two wheels who wants a more convenient way to get from A to B for trip of 1 to 3 km. If we want to encourage non-motorised travel generally in Australia it makes good sense to regard the bicycle as a pedestrian vehicle. If pedestrians are not given a safe cycling option Australian experience shows they will use cars instead.

The environmental benefits of walking and cycling a total of 3.8 km per day in the Netherlands compared to around 0.8 km per day in Australia are significant indeed when expressed on a per capita basis. They are set out and analysed in another conference paper (Parker 2001). Compared to the Australian urban car fleet this has resulted in the Dutch car fleet producing fewer per capita emissions in 1996; 49% less of the greenhouse gas carbon dioxide, 78% less carbon monoxide, 43% less nitrogen oxides and 82% less volatile organic compounds.

The discouragement of walking and cycling in Australia

In Australia the practice in recent years of subsidising large car use as part of the salary package and before that high company car tax allowances, have resulted in, and will continue to lock people into, car dependency for 'all trips' including the trip to work and school (Hawes 1999). The over use of the motor car and the decline of informal car sharing for the trip to work from 1976 results in single occupant cars causing severe congestion in cities. In Victoria trips to school (figure 2) show a large decline in

walking and cycling and this is typical of other states. For example in Adelaide in 1981 only 24% of Adelaide's children were being chauffeured to school and 55% of them either walked (42%) or cycled (14%).

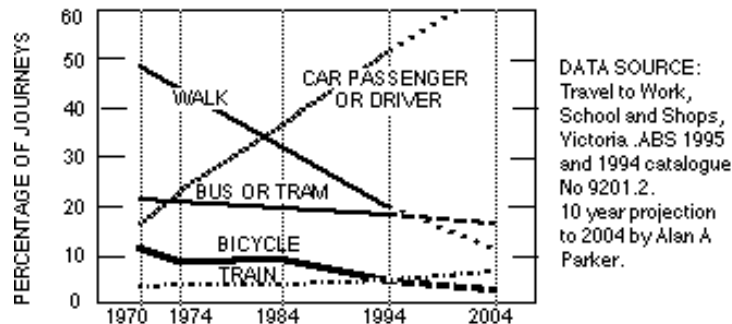


Figure 2. Victoria 1970 to 2004: Percentage of Journeys to Educational destinations by Mode

By 1997 60% of Adelaide's children were being chauffeured to school and only 24.5 % of them either walked (20.5%) or cycled (4.5 %).(ABS 1995)

Furthermore the 1976 to 1996 Census data for the journey to work in urban Australia (See figure 3) suggest that the trends shown will continue for many years and, due to the long lead times involved to change transport behaviour, to at least 2001 (as shown on figure 3) and possibly to 2006. On average three times as many men will continue to ride a bicycle as women because of the actual and perceived hazards. In the Netherlands as many women as men cycle to work.

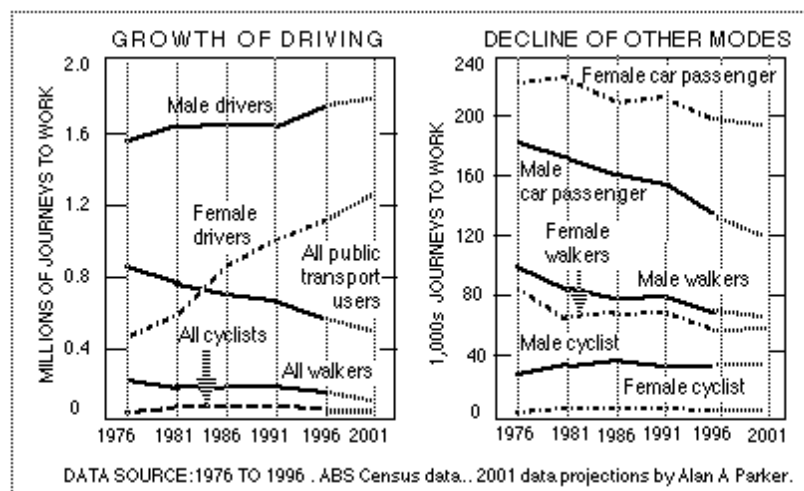


Fig 3. Australia Capital Cities: changes in the journey to work 1976/2001

There are no official national data for 'all trips' made in urban Australia except for 'trip to work' data from the ABS Census (see figure 3). Melbourne data are the nearest we will get to a surrogate national indicator (See right side graph on figure 4). Note that from 1978 to 1996 the decline of the more sustainable transport modes in the Netherlands is far less than for Melbourne. Notably the 28% of bicycle trips in the Netherlands compared to 2% in Melbourne. Significantly, after 18 years, bicycle trip making has been maintained at a high level in the Netherlands but only 2 % of all trips are made by bicycle in urban Australia. The problem is the lack of national data for Australia. The ups and downs do show trends that show changes over time however what the specific percentage figures for walking are in urban Australia we do not know.

It seems likely that there has been a decline in the percentage of walking trips in both the Netherlands and Melbourne and that the rate of decline was far less in the Netherlands. There has been a large decline in the percentage of public transport trips in Melbourne and a slight increase in the Netherlands so that by 1996 the Netherlands had proportionally more public transport trips.

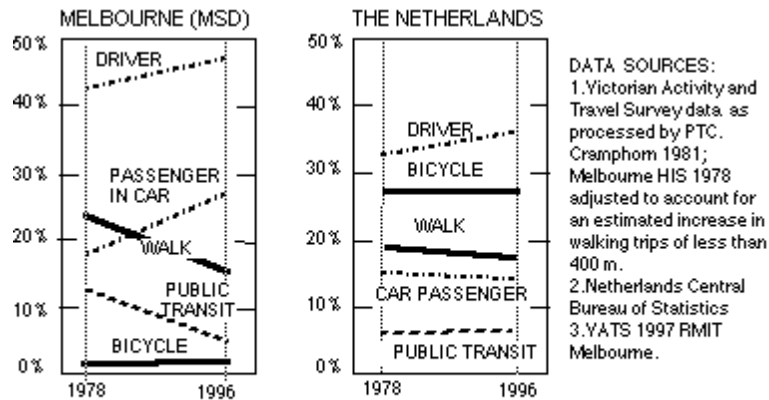


Figure 4, Melbourne MSD and The Netherlands: Percentage of all trips for all purposes 1978 to 1996

The Dutch philosophy of sustainable road safety

Dutch road safety policy is based on the philosophy of “sustainable road safety” which in practice results in fewer and fewer road users being exposed to injurious mechanical forces in collisions that produce death or crippling injuries. Also the Dutch invented traffic calming in the early 1970s and there are now 6,500 “woonerfs”, that is safe local streets where cars cannot go or can only travel at 12 kph or less. Also the disabled can safely use their small electric vehicles on the separate bikepaths and in traffic calmed areas (Parker 2000 A).

The philosophy of “sustainable road safety” recognises the vulnerability of non-motorised road users and gives priority to their safety needs. This is why, amongst other things, the default speed limit on undivided main roads in built up areas is 50 kph and 30 kph in residential precincts (Corben 1998). As Corben puts it:-

"they are providing more pedestrian crossings and accepting that 'the car' is no longer sacred"....."designating appropriate road function, while important in managing all types of road traffic, could be especially effective in improving pedestrian safety...they will be upgrading main roads that tend towards a flow function and downgrading main roads with mixed flow and access functions".

In addition most main roads have separate bicycle paths separate from the footpath and in places where that is not possible bikelanes are provided subject to there being a maximum speed limit of 50 km/hr. Pedestrian zones that are found in all Dutch cities often take in much of the city centre. (Pucher and Dijkstra 2000) The philosophy of “sustainable road safety” informs the Dutch approach to road hierarchy in the central area of cities. They integrate the provision of bicycle and pedestrian facilities as part of an overall plan to constrain motor vehicle traffic, restrict car parking (CROW 1994) and provide short cuts for walkers and cyclists (CROW 1993 A).

Developing one way street systems has freed up a lot of road lanes in the arterial road network for pedestrian use and greatly enhanced bikeway and public transport networks. Some of the road lanes and on-street parking spaces are removed and replaced with bikeways, bicycle parking bays, pedestrian malls, and tram and bus lanes in car free areas. All these measures constrain car use because they effectively increase the mesh size of the existing arterial road network so driving is less convenient and fewer people drive.

Figure 5 shows that the Dutch have one of the lowest road death rates per 100,000 population in the OECD. It is 30% less than Australian death rate, despite the high level of bicycle use and the absence of compulsory helmet wearing legislation, in the Netherlands.

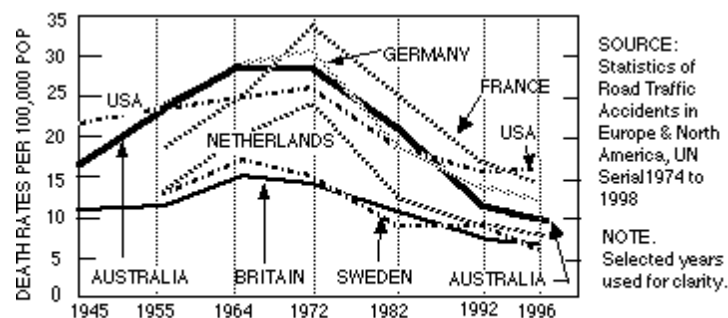


Fig 5 Road deaths per 100,000 people: 7 OECD Countries

The large reduction in the pedestrian death rate per 100,000 population from 1965 to 1998 is a useful indicator (Figure 6) of pedestrian safety in the Netherlands because pedestrian trips as a percentage of all trips has been around 18% in the Netherlands since 1980 to 1998. This tells us that the Dutch are making walking much safer because they are still making the same proportion of walking trips as they did in 1980 (Wellemen 1999).

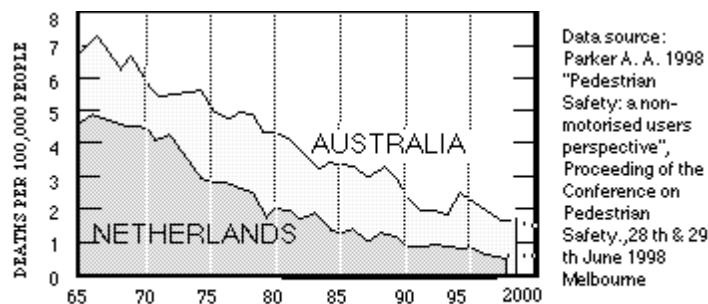


Fig 6 Pedestrian road accidents death rates per 100,000 population. The Netherlands and Australia

However this is not an accurate benchmarking measure for Australian pedestrian safety because we do not know the reduction in the proportion of walking trips over the last 20 years, except to say they are much less now, and we do not have any accurate measure of how much less. All we can say about Figure 6 is that the death rate per 100,000 population was around 50% higher in 1965 and since 1979 has been around 150% higher. By this measure Australian pedestrians are only as safe now as Dutch pedestrians were in 1980.

Estimates from the trends 'for all trips' in Melbourne (figure 4) are unreliable. The trips to work and school are reliable but they only indicate a large reduction in the percentage of walking trips but do not tell us about changes in the per capita distance walked. The only meaningful and accurate indicator of walking and cycling safety is the death rate per 100 million km travelled and we cannot measure that except for 1985. Figure 7 shows that walking was 5 time safer in the Netherlands than Australia in 1985 and cycling was twice as safe.

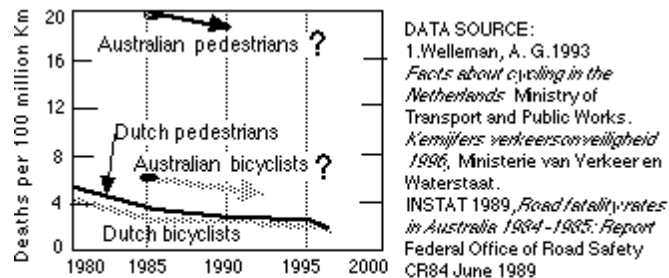


Figure 7. *Australia and The Netherlands: bicycle and pedestrian death rates per 100 million kms*

The Australian death rate per million km walked in 1985 was appalling and could have got much worse since then relative to the Dutch rate. It is most unlikely to have improved. Even though elderly cyclists and pedestrians are far more susceptible to dying due to injuries when run over they are not deterred from making these trips as are many elderly Australians and Americans. (Pucher and Dijkstra 2000). Australian pedestrian planners need to express a strong objection to the myth put about by the Australian Transport Safety Bureau that walking is becoming safer because there are fewer fatal accidents. They do not know if walking is more or less safe per 100,000 km walked than it was in 1985 because they have deliberately chosen not to collect the data.

Education and enforcement in the Netherlands

Two other radical Dutch approaches that improve the safety of walkers and cyclists are innovations in driver and rider education and new traffic laws that recognise the vulnerability of non-motorised users. Driver training in the Netherlands now involves a longer training period that is more relevant to the safety needs of cyclists and pedestrians than in Australia because it enables drivers to anticipate unsafe and illegal behaviour by cyclists and pedestrians. Also by the age of ten every child has received extensive instruction on safe walking and bicycling practice (Pucher and Dijkstra 2000). Fortunately Australia is not so far behind in educating young children and the Bike-Ed program is promoted nationally.

Dutch traffic law was changed in 1998 regarding accidents involving cyclists and pedestrians so that motorists are now considered to be wholly at fault. Having the right of way does not excuse motorists from hitting cyclists and pedestrians and the courts require that motorists anticipate unsafe walking and cycling behaviour. That applies even to illegal behaviour and insurance companies pay damages to cyclists and pedestrians automatically regardless of guilt. Low speed limits are rigorously enforced with no leeway given to those who travel above the limits, which makes it safer to cross roads. Finally, the punishment of driving offenders is far more severe in the Netherlands than in the USA (Pucher and Dijkstra 2000) and Australia.

PCA and BFA policy regarding Road safety.

This paper concludes that the Dutch experience shows it is practical but very difficult to safely maintain and then increase non-motorised travel in isolation from a large package of supporting measures, to reduce amongst other things, car dependency and to constrain environmentally undesirable forms of car use.

This paper only recommends specific road safety measures. However the other Dutch measures that encourage safe walking and cycling are referenced (Parker 1999)(BFA 1999). To arrest the decline in walking and make walking safer the implementation of the following road, traffic and vehicle safety policies, and Commonwealth funding policies are advocated by the PCA or BFA or both, and all of them are necessary.

1. Introduce low speed limits, new traffic laws and a low speed culture

The European Charter of Pedestrians' Rights stated in 1988 that *The pedestrian has a particular right to expect: the fixing of speed limits and modifications to the layout of roads and junctions as a way of effectively safeguarding pedestrian and bicycle traffic*". The international Velo-City bicycle planning conference in 1993 reached a similar conclusion. This is why both the PCA and BFA advocated a 50-km/h default limit for the Australian road rules (Parker 1995 B) and it also recommended that the Federal Office of Road safety support local road safety education programmes with statewide media campaigns. The objective is to gain public acceptance of 40 km/hr. local area limits by creating a low speed culture. Also Dutch style traffic laws (see page 11) that recognise the vulnerability of non-motorised users are required

2. The need for pedestrian friendly vehicles.

In addition to the need to ban bullbars in urban areas, because the accident data indicate an extreme risk to pedestrians and bicyclists,(Parker 1995 A) the BFA believes that cars can be made more pedestrian friendly .Indeed in road safety studies prepared by Japanese road safety agencies to assist Honda experimental car designers they found that Motorists had difficulty in seeing pedestrians at dusk, dawn, and night especially in rain and did not reveal pedestrians to drivers at speed on the open road. At intersections rain on side windows prevented drivers from seeing pedestrians crossing.

They also found that head face and neck injuries are what result in most deaths. Bumper bars, bonnet front edges and rounded car fronts produce most lower limb injuries to adults and chest and back injuries to children. The intention is to bring in design improvements to reduce these injuries will be standard safety features on the next generation of Japanese cars. (Honda 1996) Sadly, in Australia by then only the newest Australian models will have these safety features and the need for them, and new ADR's, was ignored in the last report on the future of the car industry by the Productivity Commission.

3. Multi-lane roundabouts in urban areas

Australian multi-lane roundabouts have vehicle entry and exit speeds that are far too high. Making them potentially lethal for cyclists and pedestrians. Worse still it is physically possible for motorists to drive very fast by cutting across the lane markings. Austroads would be well advised to put on hold their roundabout design manual and the Road Safety authorities need to develop safety audit procedures that takes into account the safety of non-motorised users.

4. The need for Commonwealth funding

The Commonwealth initially needs to provide \$200 million funding for a package of measures. There are off the shelf programs that encourage walking and cycling and can quickly be implemented by all state and local governments. (BFA 1999) This would include existing bikeplans and bicycle strategy plans, behavioural programs such as the Travel Smart programs in WA (Ker and James 1999) and the promotion of similar programs in all states. It would also include a budget to administer the National Bicycle Strategy (Austroads 1999) and fund the Australian Transport Safety Bureau to commission research studies to establish a national database for walking and cycling.

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